

REMARKS/ARGUMENTS

Claims 11-21 and 29-32 were rejected under 35 U.S.C. § 102(b) and/or § 103(a), and all of these rejections are respectfully traversed. However, to simplify prosecution, these claims have been cancelled, so these rejections are now moot. The right to present these claims later in the prosecution of this application or in one or more continuing applications is reserved.

Independent claims 1 and 22 are novel and patentable over Stoyell and Groeger. Independent claim 1 defines a filter element comprising a pleated composite having a functional drainage layer and a filter layer. The functional drainage layer is positioned in the pleats to pass fluid in an edgewise direction through the functional drainage layer along one side of the filter layer. As the fluid passes edgewise through the functional drainage layer, the fluid is treated by a functional material of the functional drainage layer. Independent claim 22 defines a methods of treating a fluid comprising directing a fluid in an edgewise direction through a functional drainage layer along one side of a filter layer of a pleated filter composite. As the fluid passes edgewise through the functional drainage layer, the fluid is treated by a functional material of the functional drainage layer. Neither Stoyell nor Groeger nor the combination of Stoyell and Groeger disclose or suggest at least these features of independent claims 1 and 22.

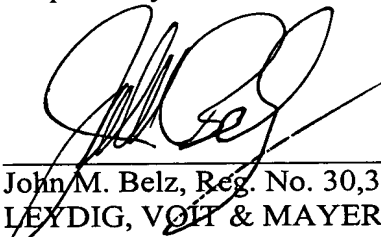
Stoyell discloses a filter element including a filter medium and drainage means such as a drainage layer disposed on at least one side of the filter medium. However, Stoyell not only fails to disclose or suggest a functional drainage layer, wherein fluid is treated by a functional material, but also teaches away from a functional drainage layer. According to Stoyell, any treatment of the fluid to remove impurities, for example, by ion exchange resin or sorbents, is performed in the “filter” medium (See column 1, lines 20-24). One of ordinary skill in the art would not have been motivated by Stoyell to provide a functional drainage layer because Stoyell expressly teaches that any treatment of the fluid to remove impurities is done in a “filter” medium which is not a drainage means or a drainage layer.

Groeger also teaches away from a functional drainage layer. Groeger discloses a fibrous structure loaded with immobilized with functional particulate. However, Groeger fails to disclose or suggest that this fibrous structure is positioned within pleats as a drainage layer to pass fluid edgewise through the fibrous structure along one side of a filter layer. Rather, Groeger expressly teaches that when the fibrous structure with the functional particulate is included in a composite with a filter layer (“37” in Figure 2; “46” and “48” in Figure 3), the fibrous layers loaded with functional particulate and the filter layers are

sandwiched between exterior layers (“34” and “38” in Figure 2; “43” and “49” in Figure 3) which are “free of functional particulate material” (column 8, lines 50 and 51; column 9, lines 21 and 22). These exterior layers, which are free of functional particulates, have larger void spaces (column 6, lines 25-27) and a much lower resistance to fluid flow than the fibrous layers loaded with functional particulates. In any pleated structure, fluid would flow into the pleats along the low resistance path edgewise through the exterior layers free of functional particulates and then pass in the thickness direction through the high resistance fibrous layers loaded with functional particulates. Groeger, thus teaches one skilled in the art that any layer in which fluid flows edgewise must be free of functional material.

Because neither Stoyell nor Groeger teach the use of a functional drainage layer, the combination of Stoyell and Groeger fails to render unpatentable independent claim 1, independent claim 22 or any of the claims that depend from independent claim 1 or 22.

Respectfully submitted,



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